

Example #15: An electric fan draws 2.0 A of current from a 120 V source.
Determine the following:

- (a) the power rating of the fan.
- (b) its electrical resistance.
- (c) the cost of operation of the fan during the month of August, assuming it is run continuously and electric energy costs 10 cents per kilowatt hour.

$$a) P = IV = 2.0(120)$$

$$\boxed{P = 2.4 \times 10^2 \text{ W}}$$

$$b) R = \frac{V}{I} = \frac{120}{2.0} = \boxed{60 \Omega}$$

→ could also use $P = \frac{V^2}{R}$ to solve

$$c) \# \text{ hours} = 31 \text{ days} \times \frac{24 \text{ hr}}{1 \text{ day}}$$

$$= 744 \text{ hr.}$$

power is 0.24 kW

$$P = \frac{\Delta E}{t}, \Delta E = .24(744)$$

$$\Delta E = 178.56 \text{ kW} \cdot \text{h}$$

$$\text{Cost} = 178.56 \text{ kW} \cdot \text{h} \times \frac{\$.10}{\text{kW} \cdot \text{h}}$$

$$\boxed{= \$18} \quad (17.86)$$